

What is claimed is

1. An inverting-filter centrifuge comprising a filter drum (16) with radial pass-through openings (18), which is rotatably supported in a machine frame (2) and projects in a cantilevered manner into a housing (1) that is connected to the machine frame (2), said filter drum (16) radially enclosing a centrifugal chamber (14) that can be placed under normal pressure, overpressure or underpressure, comprising a centrifugal chamber lid (25) that closes the centrifugal chamber (14) at its face end, comprising a pusher bottom (23) that is rigidly joined to the centrifugal chamber lid (25) while leaving a free space and defining the other side of the centrifugal chamber (14), wherein the centrifugal chamber (14) is filled from the side, the filter drum (16) and pusher bottom (23) are caused to rotate in unison by means of a rotatably driven hollow shaft (3) and the hollow shaft (3) is firmly connected to the filter drum (16), an axially displaceable pusher shaft (12) is disposed inside the hollow shaft (3) rotating in unison with it, the filter drum (16) and pusher bottom (23) are moved relative to one another by means of an axial displacement of the pusher shaft (12) in order to turn up the filter cloth and expel separated solids from the centrifugal chamber (14) into a solids collection chamber (32), characterized in that the centrifugal chamber (14) is closed at its face end by a non-perforated centrifugal chamber lid (25) that is closed across its entire surface, that the pusher bottom (23) defining the centrifugal chamber (14) on the other side is firmly connected to the rotating pusher shaft (12) and that an opening (15) extending through the pusher bottom (23) and opening into the centrifugal chamber (14) passes through the pusher shaft (12) along its entire length to its end facing away from the centrifugal chamber (14) and transitions, via an inlet pipe (51) that is rigidly joined to a radially static pusher

plate (74) into an inlet channel (26) that is connected to the pusher plate (74), and a passage is thus created for media to be entered into the centrifugal chamber (14), said passage being sealed against the environment by means of a seal (47) arranged between the rotating pusher shaft (12) and the pusher plate (74) that is axially connected to it.

2. An inverting-filter centrifuge according to claim 1, characterized in that the opening (15) in the pusher shaft (12) is narrowed at its end facing away from the centrifugal chamber (14).
3. An inverting-filter centrifuge according to claim 1, characterized in that the opening (15) in the pusher shaft (12) widens from its end facing away from the centrifugal chamber (14) toward the centrifugal chamber (14).
4. An inverting-filter centrifuge according to claim 1, characterized in that the axis of the pusher shaft (12) with its opening (15) extends downwardly sloping toward the centrifugal chamber.
5. An inverting-filter centrifuge according to claim 1, characterized in that the seal (47) that seals the rotating pusher shaft (12) with its opening (15) against the radially static inlet pipe (51) has protection zones preceding it.
6. An inverting-filter centrifuge according to claim 5, characterized in that a first protection zone (48) is pressurized with gas and the exiting gas creates a seal-gas flow in the gap (54) that separates the radially static inlet pipe (51) from the rotating pusher shaft (12).

7. An inverting-filter centrifuge according to claim 5, characterized in that wash liquid is introduced into a first protection zone (48), said wash liquid flowing off through the gap (54) and the opening (15) in the pusher shaft (12).
8. An inverting-filter centrifuge according to claim 5, characterized in that to clean a second protection zone (49) which is delimited toward the inside by the pusher shaft (12), cleaning or wash liquid is entered and the rubbed-off seal particles that are present in this protection zone (49) are channeled out through a discharge line (42).
9. An inverting-filter centrifuge according to claim 1, characterized in that a vent pipe (50) is provided that passes through the opening (15) in the center of the pusher shaft (12), the inlet pipe (51), and the inlet channel (26).
10. An inverting-filter centrifuge according to claim 9, characterized in that the vent pipe (50) is supported in the inlet pipe (51) and, after the last point of support at the end of the inlet pipe (51) facing the centrifugal chamber (14), projects into the opening (15) of the pusher shaft (12).
11. An inverting-filter centrifuge according to claim 10, characterized in that the vent pipe (50) projecting into the opening (15) of the pusher shaft (12) extends, by means of a connecting piece (59) and a vent pipe extension (68) that is supported on the inside wall of the pusher shaft (12), all the way to the centrifugal chamber (14).
12. An inverting-filter centrifuge according to claim 10, characterized in that the inlet pipe (51) extends as far into the opening (15) of the pusher shaft (12) as possible with respect to vibrations.

13. An inverting-filter centrifuge according to claim 9, characterized in that the vent pipe (50) is supported on the inside wall of the pusher shaft (12) and rotates along with it.
14. An inverting-filter centrifuge according to claim 13, characterized in that the vent pipe (50) that rotates with the pusher shaft (12) projects at one end into the centrifugal chamber (14) and is connected at the other end via a connecting space (58) to a radially static vent connection (57).
15. An inverting-filter centrifuge according to claim 1, characterized in that one or multiple channels (63) in the pusher shaft (12) create a vent connection between the rotating centrifugal chamber (14) and a radially static vent line (66).
16. An inverting-filter centrifuge according to claim 1, characterized in that one or multiple channels (63) in the pusher shaft (12) are guided from a point located a short distance from the end of the pusher shaft (12) facing away from the centrifugal chamber (14) to the center and are connected from there by a common vent pipe via the connecting space (58) to a radially static vent connection (57).
17. An inverting-filter centrifuge according to claim 1, characterized in that a drive means (69) moves the pusher plate (74) after completion of its drum closing movement against an end-stop surface (77) on the machine frame (2).
18. An inverting-filter centrifuge according to claims 1 or 17, characterized in that a threaded spindle (72) presses, by means of a spring (76), the pusher plate (74) with the rigidly joined inlet pipe (51) against the machine frame (2).

19. An inverting-filter centrifuge according to any of claims 1, 17, or 18, characterized in that the pusher plate (74) is locked firmly but removably to the machine frame (2).
20. An inverting-filter centrifuge according to any of claims 1, 17, 18 or 19, characterized in that the pusher plate (74) is secured on the machine frame (2) by means of additional support means in multiple axes.
21. An inverting-filter centrifuge according to any of claims 1, 17, 18, 19 or 20, characterized in that only the axial component of the hydraulic force occurring in the centrifugal chamber (14), as well as the force needed for opening and closing the centrifugal chamber, needs to be absorbed as an axial force by the pusher bearings (45, 46) connected to the pusher shaft (17) and by the main bearing (5).
22. An inverting-filter centrifuge according to claim 19, characterized in that the locking means is designed self-locking.
23. An inverting-filter centrifuge according to claim 1, characterized in that between a hollow shaft (3), or the drive wheel (7) that is rigidly connected to the hollow shaft (3), and a pusher bearing (45) a protective means that tightly seals against the ambient atmosphere is provided that encompasses the pusher shaft (12) and rotates with it while permitting the axial displacement.
24. An inverting-filter centrifuge according to claim 1, characterized in that through the opening (15) in the pusher shaft (12) as well as through the inlet pipe (51) and the inlet channel (26) a gas flow is guided for an overpressure or underpressure to be created in the centrifugal chamber (14), as well as to release them.

25. An inverting-filter centrifuge according to claim 1, characterized in that the face end of the solids collection chamber (32) is designed free of openings.
26. An inverting-filter centrifuge according to claim 1, characterized in that the solids collection chamber (32) is free of traversing components that serve to fill the centrifugal chamber (14) with media.
27. An inverting-filter centrifuge according to claim 1, characterized in that in the solids collection chamber (32) and in the centrifugal chamber (14) no abrasion-producing radial seals are present.
28. An inverting-filter centrifuge according to claim 1, characterized in that by relocating the media supply equipment (120) and the resulting elimination in a clean room (101) enclosing the process compartment of the inverting-filter centrifuge, the former is designed considerably smaller and easier to clean.
29. An inverting-filter centrifuge according to claim 26, characterized in that a central insert (27) in the centrifugal chamber lid (25) and/or a large area (29) at the face end of the housing (1) is designed see-through so that the centrifugal chamber (14) can be viewed from outside even with the housing (1) closed and the filter drum (16) rotating.
30. An inverting-filter centrifuge according to claim 1, characterized in that the housing (1) enclosing the process compartment is encompassed by a glove box (130) that incorporates at least one viewing pane.
31. An inverting-filter centrifuge according to claim 30, characterized in that openings (131) with flexible gloves (132) and hatches in the housing (1) are provided in the glove box

(130), through which it is possible to reach into the process compartment without opening the housing (1) enclosing the process compartment.

32. An inverting-filter centrifuge according to any of claims 30 or 31, characterized in that the housing (1) is designed to pivot together with the glove box (130) when the process compartment is opened.
33. An inverting-filter centrifuge according to claim 1, characterized in that the medium to be introduced into the centrifugal chamber (14) is liquid, solid, gaseous or any random combination of these aggregate states.
34. An inverting-filter centrifuge according to claim 1 or 26, characterized in that by creating a connection between the centrifugal chamber (14), passing through the solids collection chamber, to the front wall of the housing (1), devices are introduced into the centrifugal chamber (14).